Dtsch. Entomol. Z. 72 (2) 2025, 251–257 | DOI 10.3897/dez.72.156715

A new genus and two new species in the tribe Empoascini (Hemiptera, Auchenorrhyncha, Cicadellidae) from China

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https://zoobank.org/3741EAE4-160C-4518-B135-58FADB431AB8

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Academic editor: Dávid Rédei ♦ **Received** 23 April 2025 ♦ **Accepted** 8 October 2025 ♦ **Published** 21 October 2025

Abstract

A new leafhopper genus, *Conjunctus* Yao, Yu & Yang, **gen. nov.**, together with its type species, *Conjunctus decussatus* Yao, Yu & Yang, **sp. nov.**, and an additional new species, *Inflatopina pilosa* Yao, Yu & Yang, **sp. nov.** (Hemiptera, Auchenorrhyncha, Cicadellidae, Typhlocybinae, Empoascini), are described from China. An updated identification key to species of the genus *Inflatopina* Lu, Dietrich & Qin, 2017 is provided.

Key Words

leafhopper, Oriental Region, species discovery, taxonomy

Introduction

The Empoascini (Hemiptera, Auchenorrhyncha, Cicadellidae) comprises small leafhoppers (2–6 mm) with pale green or yellow bodies, characterised by forewings that lack an appendix and hindwings with well-developed marginal veins extending to the tips of the R+M veins (Zhang 1990). The tribe includes 108 valid genera and 1,401 valid species worldwide (Dmitriev et al. 2022), making it the second largest tribe within Typhlocybinae after Erythroneurini.

The genus *Inflatopina* Lu, Dietrich & Qin, 2017 (Hemiptera, Auchenorrhyncha, Cicadellidae, Typhlocybinae, Empoascini) was established by Xu et al. (2017). The genus contained the type species *Inflatopina intonsa* Lu, Dietrich & Qin, 2017, and five species that were formerly recognised as members of the *Alebroides sohii* species group: *A. chiasmatica* Yu & Yang, 2014, *A. rayi* Dworakowska, 1997, *A. sohii* Thapa, 1989, *A. victor* Dworakowska, 1994, and *A. zenkae* Dworakowska, 1997. Subsequently, Xu et al. (2019) described three additional species, bringing the total number of recognised species in the genus to nine.

In this paper, we describe a new genus of Typhlocybinae, together with a new species (*Conjunctus decussatus* Yao, Yu & Yang, sp. nov.) and another new species of the genus *Inflatopina*, *I. pilosa* Yao, Yu & Yang, sp. nov., and provide an updated identification key to the species of the latter genus.

Materials and methods

Specimens were collected by sweep-netting. Their external morphology was examined, imaged, and measured using a KEYENCE VHX-6000 digital imaging system. Body lengths were measured from the apex of the vertex to the apices of the forewings and are provided in mm. Male genitalia were imaged using a Nikon Eclipse Ni-E compound microscope equipped with NIS-Elements AR 5.11.01 software (Nikon Instruments Japan Inc.). Morphological terminology mainly follows Zhang (1990) and Dietrich (2005); however, that of wing venation follows Dworakowska (1993), and that of the setae on the subgenital plates follows Xu et al. (2021). All type and voucher specimens treated in this study are deposited in the Institute of Entomology, Guizhou University, Guiyang, China.

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Taxonomy

Conjunctus Yao, Yu & Yang, gen. nov.

https://zoobank.org/8B39714B-1154-4931-8A34-279133E65ECE

Type species. *Conjunctus decussatus* Yao, Yu & Yang, sp. nov., is here designated.

Diagnosis. The new genus is similar to *Ishiharella* Dworakowska, 1970, and *Mahmoodia* Dworakowska, 1970, in having the subgenital plates fused basally. The new genus is closely related to *Ishiharella* but can be distinguished by the following characters: (1) base of aedeagus slightly curved, lacking paired protuberances at the base of shaft (Fig. 2D, E, G); (2) aedeagal shaft with vertical tubular gonoduct, with gonopore opening positioned distinctly above inflated part of shaft (Fig. 2D, E, G) (vs. opening within inflated part of shaft in *Ishiharella*). The new genus differs from *Mahmoodia* in having very thick parameres and a penis lacking a large pre-atrium with appendages (Fig. 2D, F). The new genus is similar to *Wolvletta* Dworakowska, 1995, *Theasca* Dworakowska, 1972, and *Radicafurcus* Qin & Zhang, 2010, in having forewings with RP and MP′ connate basally and hindwings with an unbranched CuA vein (Fig. 1E, F). However, the new genus differs from *Wolvletta* by the presence of a laminar enlargement on the subterminal portion of the aedeagal shaft in lateral view and a distinctly unforked shaft apex (Fig. 2G). The new genus differs from *Theasca* by its very short, slender abdominal apodemes (Fig. 2A) and penis-bearing tuberculous subterminal appendages (Fig. 2D, E). Finally, the new genus can be distinguished from *Radicafurcus* by the aedeagus, which bears a ventral apodeme and remains unbranched in its ventral third (Fig. 2D, G).

Description. ***Head.*** Crown with anterior margin obtusely rounded, posterior margin distinctly concave, nearly parallel in dorsal aspect. Vertex with median depression widening posteriorly (Fig. 1A, D). Crown about 0.4 times interocular width, distinctly shorter than median length of pronotum; maximum crown width narrower than pronotum width (Fig. 1A, D). Ocelli on vertex, far from compound eyes (Fig. 1B, C). Coronal suture absent. Face broad, length about twice that of crown; frontoclypeal area distinctly elevated (Fig. 1B, C).

Thorax. Pronotum with anterior margin broadly arcuate, posterior margin concave, lateral margins with lambda-shaped depressions (Fig. 1A, D). Forewing with RP and MP′ connate basally, forming a triangular third apical cell; three apical veins arising from m cell; m cell slightly longer, about 4 times wider than r cell (Fig. 1E). Hindwing with CuA vein unbranched (Fig. 1F).

Abdomen. Ventral abdominal apodemes weakly developed (Fig. 2A). Pygofer well-developed, with posterior margin folded ventrally, apex with minute setae, bearing ventral pygofer appendage (Fig. 2B, C). Subgenital plates united basally to valve; macrosetae present, marginal setae lateral to macrosetae (Fig. 2I). Paramere thick, short; apex with rolled folds, sub-terminal part with setae (Fig. 2D, F). Aedeagus shaft slightly curved at base in lateral view; subterminal portion with protrusion and laminar enlargement (Fig. 2G). Aedeagus shaft sclerotised, with vertical tubular gonoduct in dorsal view; gonopore opening distinctly above protrusion and inflated part of shaft (Fig. 2D, E, G). Anal tube process developed (Fig. 2J). Connective broad at base, narrowed distally (Fig. 2D, E, G).

Diversity and distribution. The single known species of the genus occurs in Oriental parts of China.

Etymology. The generic name refers to the fusion of the subgenital plates at their basal articulation, a diagnostic character for the genus. Gender: masculine.

Conjunctus decussatus Yao, Yu & Yang, sp. nov.

https://zoobank.org/B2A6D372-11E4-4D52-93BA-47D79CE2AD1D

Figs 1, 2

Type material. ***Holotype*:** ♂, China: Chongqing, Chengkou, 5 July 2008, leg. Yang Zaihua. ***Paratype*:** 1 ♂, same data as holotype.

Description of male. ***Body length*** ($n = 2$): 4.6–4.9 mm.

Head. Crown orange-red, with a large, black pentagonal spot at posterior margin and vertex (Fig. 1A, D). Eyes black, ocelli brown, on vertex (Fig. 1B, C). Face light yellowish-brown (Fig. 1B, C).

Thorax. Pronotum with trapezoidal transverse depression; median and posterior portions reddish-brown, elevated (Fig. 1A, D). Scutellum light brown, intershield grooves brown, not reaching lateral margins (Fig. 1A, D). Forewings light brown; hindwings hyaline, veins brown (Fig. 1E, F). Abdomen dark brown. Legs light yellow; claws and tibiae of fore-legs brown (Fig. 1B).

Abdomen. Tergites dark brown. Ventral abdominal apodemes short, fine, extending to third abdominal segment (Fig. 2A). Pygofer broad basally in dorsal view, apex with fine setae; dorsal bridge exceeding one third of pygofer length. Posterior margin of lateral valve of pygofer involute (Fig. 2B, C). Ventral appendage crossed, narrowed distally (Fig. 2H). Subgenital plates exceeding pygofer, fused basally, with a single row of macrosetae sub-basally to tip; numerous macrosetae with marginal setae laterally (Fig. 2I). Paramere broad, with subterminally fine setae, apex tipped with rolled folds. (Fig. 2D, F). Aedeagal shaft enlarged distally in lateral view, with tuberculate dorsal protuberance and tubular gonoduct; the gonopore positioned above aedeagal shaft and dorsal protuberance (Fig. 2D, E, G). Anal styli elongated, straight, tapering to sharp apex, with short basal prickle (Fig. 2J). Connective triangular, broad basally, narrow distally, fused to base of aedeagal shaft below curvature (Fig. 2D, E).

Female. Unknown.

Distribution. China, Chongqing.

Etymology. The name of the new species is the Latin adjective *decussatus*, *-a*, *-um*, meaning "decussated, crossed", referring to the crossed ventral pygofer appendages of the male.

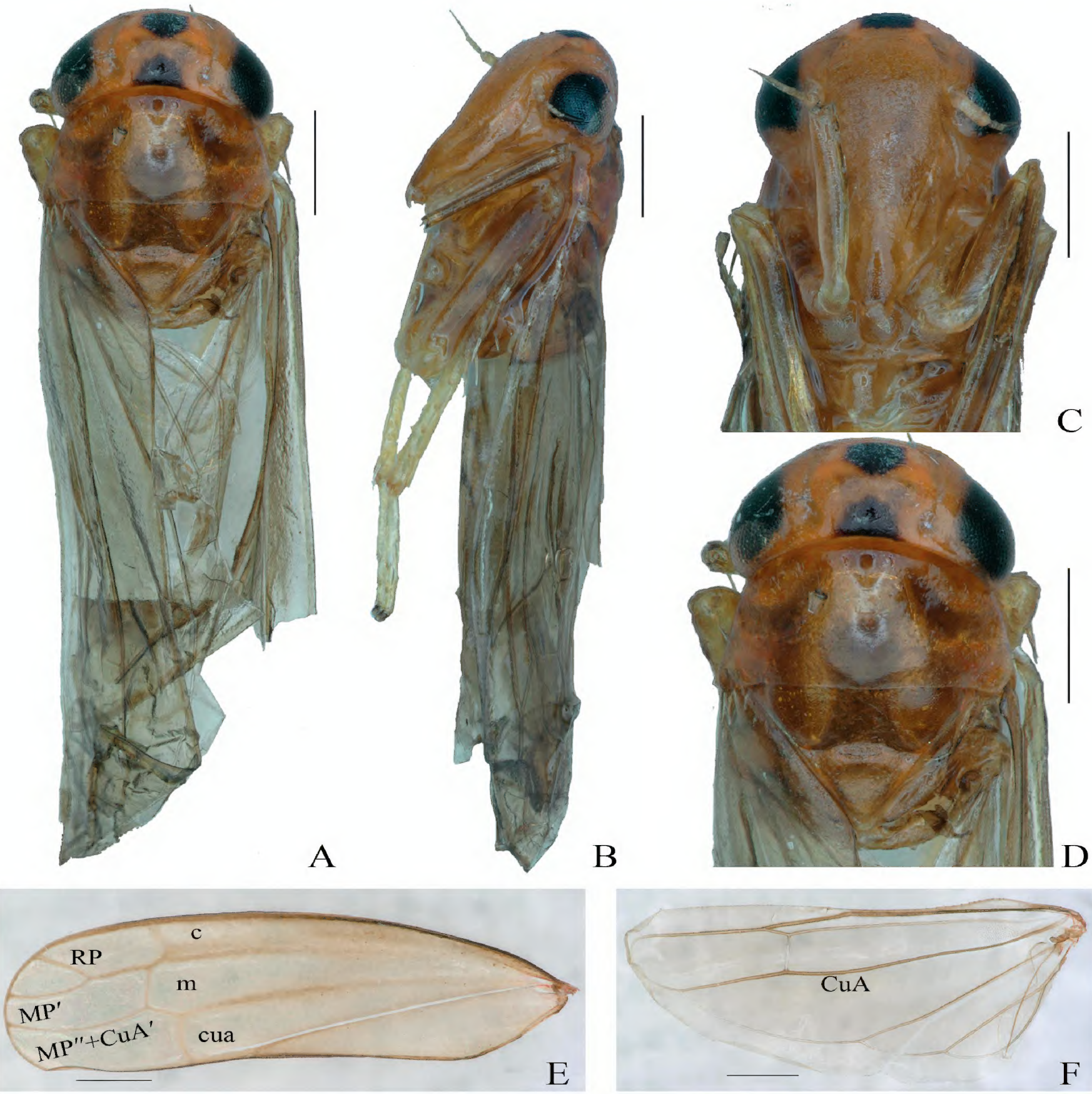

Figure 1. *Conjunctus decussatus* sp. nov., male holotype. **A.** Dorsal view; **B.** Lateral view; **C.** Head and thorax, ventral view; **D.** Same, dorsal view; **E.** Forewing; **F.** Hindwing. Scale bars: 500 μm.

Genus *Inflatopina* Lu, Dietrich & Qin, 2017

Inflatopina Lu, Dietrich & Qin *in* Xu, Lu, Wang, Dietrich & Qin, 2017: 330.

Type species by original designation. *Inflatopina intonsa* Lu, Dietrich & Qin, 2017.

Diversity and distribution. The genus currently comprises 10 species (including the one described in this paper), distributed in the Oriental and Palaearctic Regions. The included species are listed and keyed below.

Inflatopina pilosa Yao, Yu & Yang, sp. nov.

https://zoobank.org/80916AEB-AF01-465F-AD64-B62F6359F0DC

Figs 3, 4

Type material. ***Holotype*:** ♂, China: Guizhou, Kuankuoshui, 11 August 2010, leg. Dai Renhuai. ***Paratypes*:** 5 ♂♂, same data as holotype; 4 ♂♂, as holotype, but leg. Li Yujian; 6 ♂♂, Guizhou, Kuankuoshui, 14 August 2010, leg. Yu Xiaofei; 1 ♂, Sichuan, Lamahe, 26 July 2012, leg. Fan Zhihua.

Diagnosis. The new species is similar to *I. chiasmatica* (Yu & Yang, 2014), *I. paravictor* Xu, Lu, Dietrich & Qin, 2019 and *I. longistria* Xu, Lu, Dietrich & Qin, 2019 in having a well-developed aedeagal pre-atrium, with atrium bearing paired protuberances and aedeagus lacking dorsal apodeme with tubular shaft (Fig. 4E–G). The new species differs from *I. chiasmatica* (Yu & Yang, 2014) in the following characters: male abdominal apodemes reaching the sixth abdominal segment (Fig. 4A), ventral pygofer appendage not exceeding pygofer (Fig. 4B, C) and enlarged portion of aedeagus spanning approximately half its total length (Fig. 4E–G). It differs from *I. paravictor* Xu, Lu, Dietrich & Qin, 2019, in having dorsal bridge of the pygofer occupying almost one-fourth the length of the lobe (Fig. 4B, C), aedeagal atrium bearing pair of processes

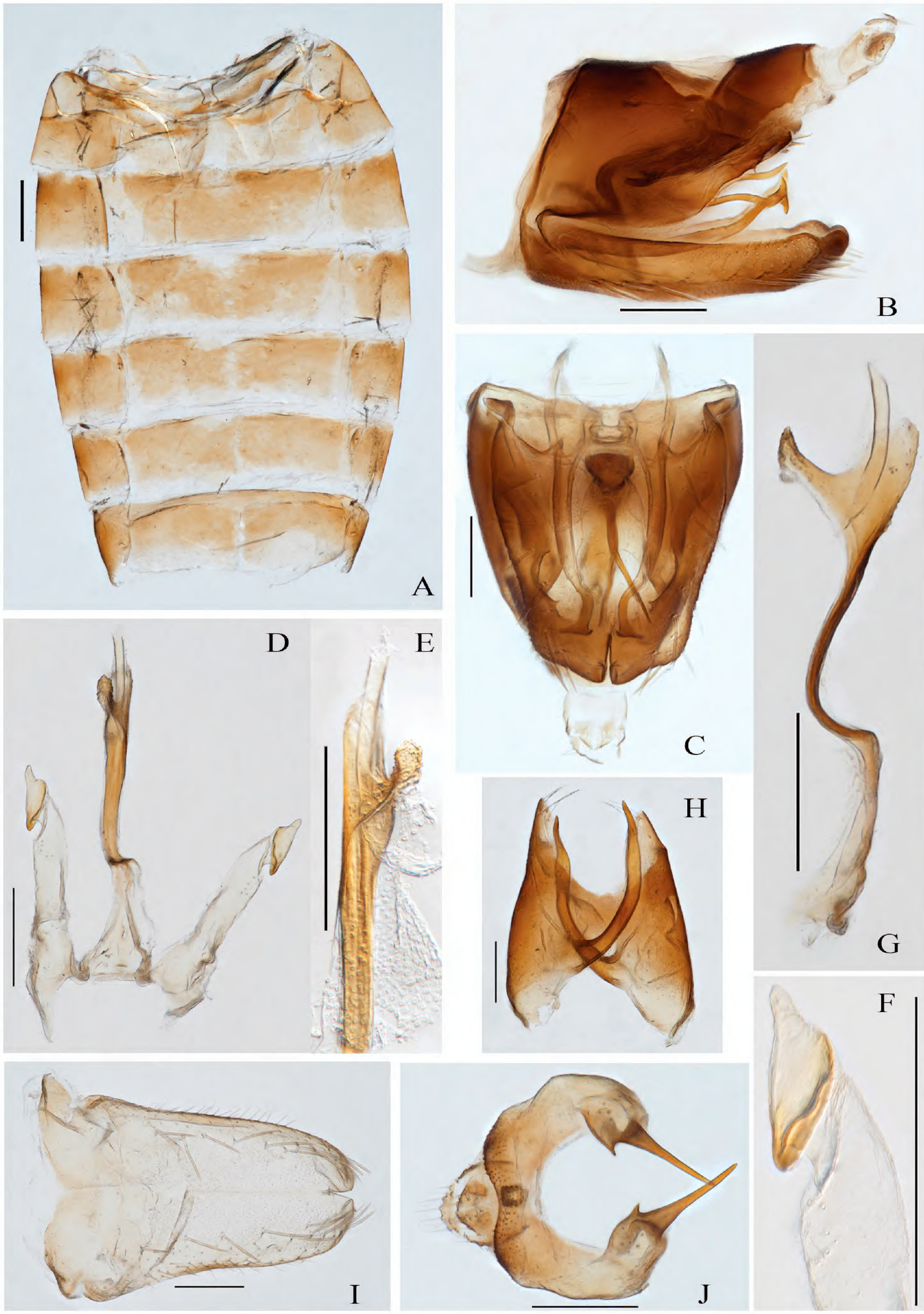

Figure 2. *Conjunctus decussatus* sp. nov. **A.** Abdominal apodemes; **B.** Male genitalia, left lateral view; **C.** Male genitalia, ventral view; **D.** Aedeagus, paramere and connective, dorsal view; **E.** Aedeagus, dorsal view; **F.** Paramere; **G.** Aedeagus, left lateral view; **H.** Pygofer and pygofer appendage, ventral view; **I.** Subgenital plate, ventral view; **J.** Anal tube and anal styli, ventral view. Scale bars: 200 μm.

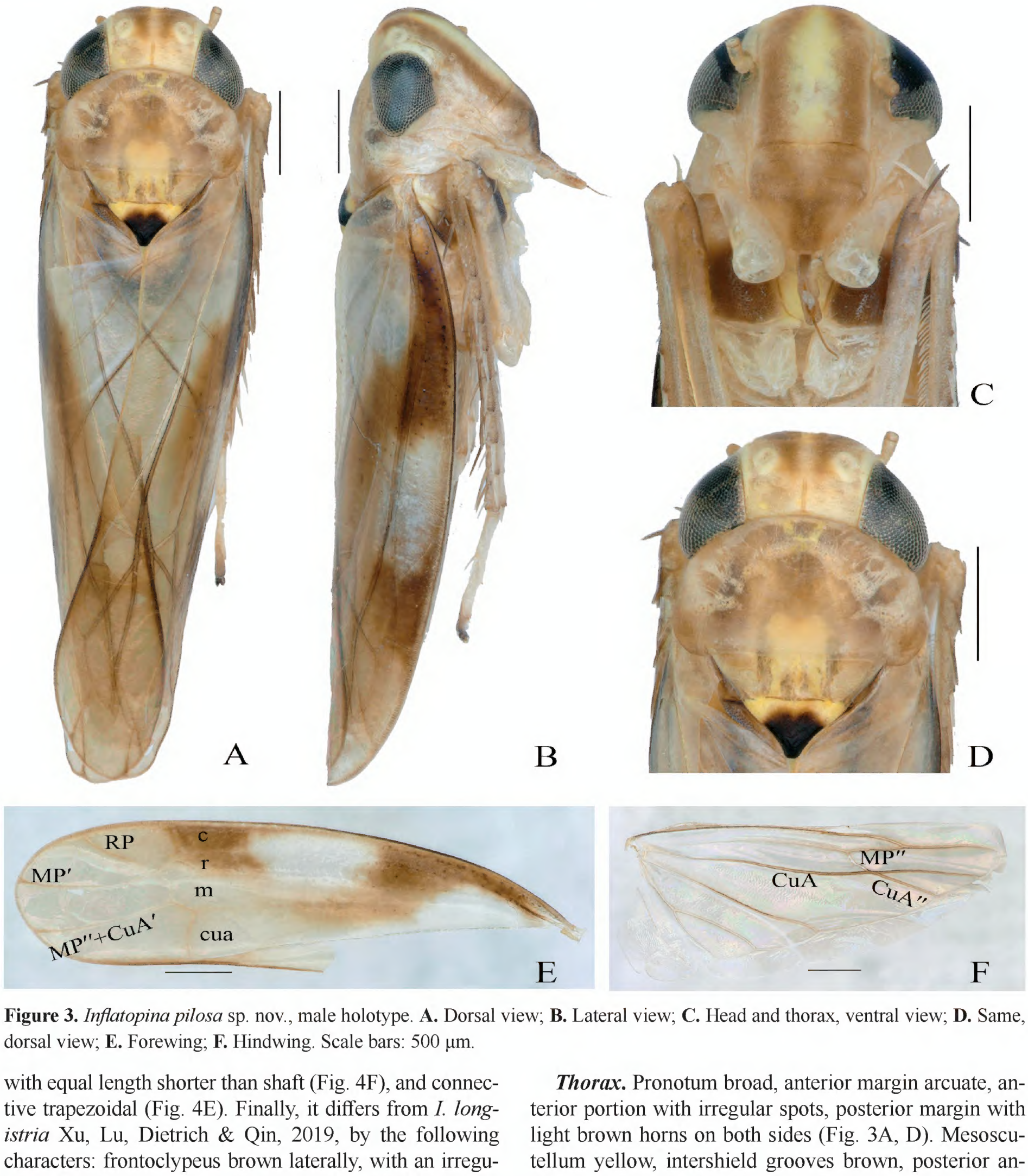

Figure 3. *Inflatopina pilosa* sp. nov., male holotype. **A.** Dorsal view; **B.** Lateral view; **C.** Head and thorax, ventral view; **D.** Same, dorsal view; **E.** Forewing; **F.** Hindwing. Scale bars: 500 μm.

with equal length shorter than shaft (Fig. 4F), and connective trapezoidal (Fig. 4E). Finally, it differs from *I. longistria* Xu, Lu, Dietrich & Qin, 2019, by the following characters: frontoclypeus brown laterally, with an irregular longitudinal yellow median stripe (Fig. 3C); subgenital plate with 49 marginal setae (Fig. 4J); and aedeagus lacking four small teeth along ventral margin (Fig. 4F).

Description of male. ***Body length*** (*n* = 17): 5.0–5.2 mm. ***Body*** stout (Fig. 3A–F).

Head. Length of crown subequal to interocular width, shorter than median length of pronotum (Fig. 3A, D). Vertex smoky yellow (Fig. 3A, D). Ocelli yellow on anterior margin of vertex; eyes black (Fig. 3A, D). Coronal suture brown, reaching near anterior crown margin (Fig. 3A, D). Face broad; anteclypeus elevated medially; frontoclypeus and anteclypeus brown, with median yellow longitudinal oblong marking, remainder yellow (Fig. 3B, C).

Thorax. Pronotum broad, anterior margin arcuate, anterior portion with irregular spots, posterior margin with light brown horns on both sides (Fig. 3A, D). Mesoscutellum yellow, intershield grooves brown, posterior angle black (Fig. 3A, D). Forewing outer margin with light brown markings; RP and MP′ veins fused basally, both originating from r cell; r cell longer than m cell, m cell wider than r cell and c cell (Fig. 3E). Hindwing with CuA branched, branching point beyond intersection of CuA and MP″ (Fig. 3F). Prothoracic tibiae and claws brown, remainder of legs yellow (Fig. 3B).

Abdomen. Abdominal apodemes broad, parallel, extending to sixth abdominal segment (Fig. 4A). Pygofer with peltate posterior margin bearing fine setae; dorsal bridge about one-fourth lobe length. Ventral appendage not exceeding pygofer, with numerous fine bristles to subterminal part (Fig. 4B, C). Subgenital plates with

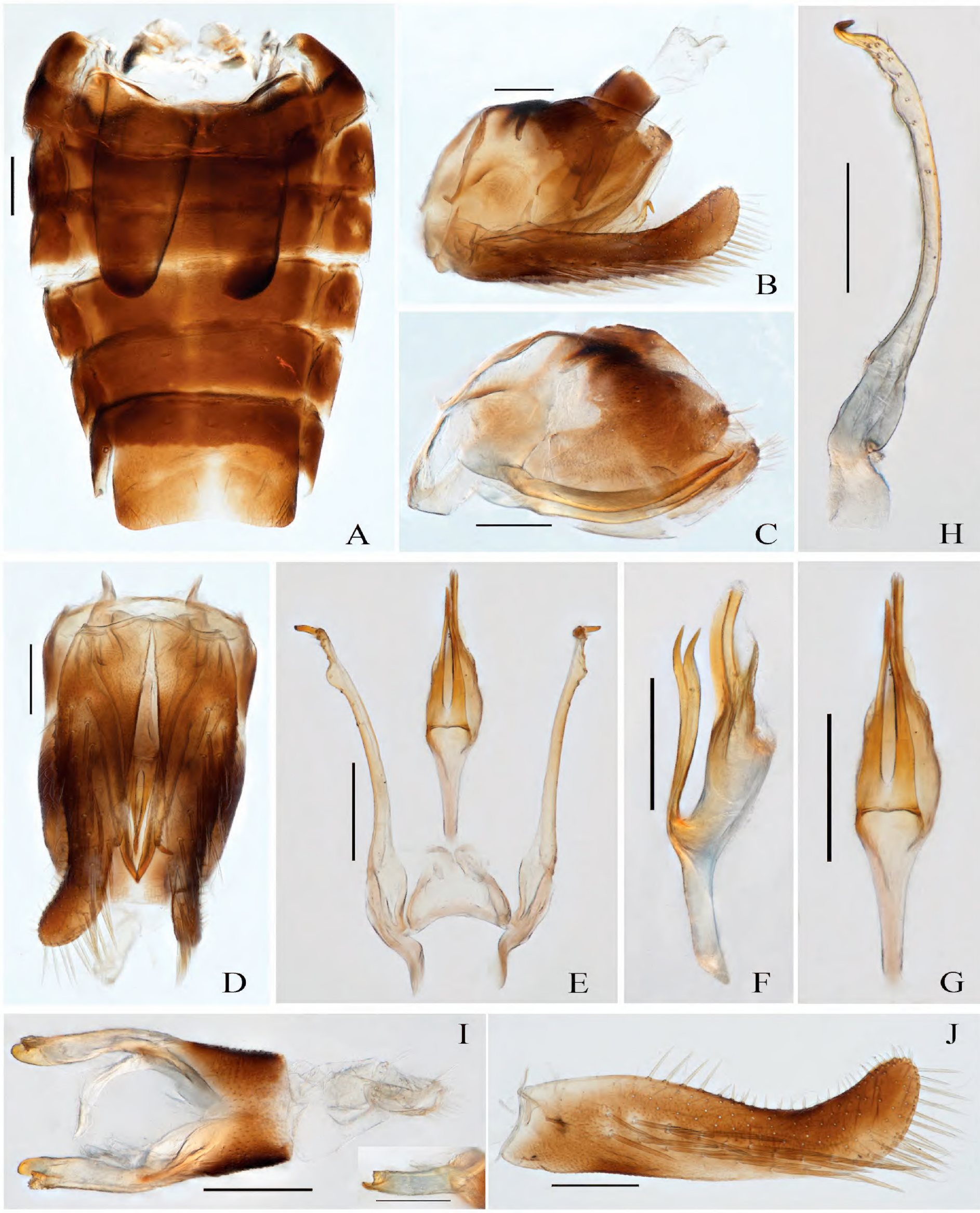

Figure 4. *Inflatopina pilosa* sp. nov. **A.** Abdominal apodemes; **B.** Male genitalia, lateral view; **C.** Pygofer and ventral appendage, left lateral view; **D.** Male genitalia, ventral view; **E.** Aedeagus, paramere and connective, dorsal view; **F** aedeagus, lateral view; **G.** Aedeagus, dorsal view; **H.** Paramere; **I.** Anal tube and anal styli, ventral view; the lower left corner shows the lateral view of the anal styli; **J.** Subgenital plate, ventral view. Scale bars: 200 μm.

4–6 basal setae, 49–51 marginal setae, 32–34 macrosetae and 38–40 long, fine setae, terminal half dorsally curved (Fig. 4J). Paramere elongate, curved, terminal half with irregular margins, proximal portion with setae, terminally with few teeth (Fig. 4E, H). Aedeagus without dorsal apodeme, pre-atrium well developed; atrium with a single pair of processes not exceeding shaft apex (Fig. 4E, G). Anal styli thick, apex irregular with small,

fine projections (Fig. 4I). Connective nearly trapezoidal, with distinct median depression dorsally (Fig. 4E).

Female. Unknown.

Distribution. China (Guizhou, Sichuan).

Etymology. The name of the new species is the Latin adjective "*pilosus*, *-a*, *-um*", meaning "hairy, pilose", referring to the fine bristles on the ventral projection of the caudal segment.

Comparative notes. The new species runs to *I. longistria* (in couplet 3) in the identification key provided by Xu et al. (2019), owing to the presence of paired ventrobasal processes on the aedeagus that are branched at their bases and a glabrous (not pubescent) ventral pygofer appendage. The following modification of the key enables separation of the two species:

3 Ventral pygofer appendage smooth, not pubescent 3a
– Ventral pygofer appendage pubescent 4
3a Connective with caudal margin hardly notched ..... *I. longistria*
– Connective with caudal margin distinctly notched ..... *I. pilosa* sp. nov.

Acknowledgements

We thank Renhuai Dai, Zhihua Fan, Yujian Li, and Zaihua Yang for collecting specimens. This study was supported by the National Natural Science Foundation of China (Nos 32360393, 32300380, and 31802002) and the Guizhou Province Science and Technology Project (Qian Ke He Pingtai Rencai–CXTD [2021] 004; Qian Ke He Pingtai ZSYS [2025] 024).

References

Dietrich CH (2005) Keys to the families of Cicadomorpha and subfamilies and tribes of Cicadellidae (Hemiptera: Auchenorrhyncha). The Florida Entomologist 88(4): 502–517. https://doi.org/10.1653/0015-4040(2005)88[502:KTTFOC]2.0.CO;2

Dmitriev DA, Angelova R, Anufriev GA, Bartlett CR, Blanco-Rodríguez E, Borodin OI, Cao YH, Cara C, Deitz LL, Dietrich CH, Dmitrieva MO, El-Sonbati SA, Evangelista de Souza O, Gjonov IV, Gonçalves AC, Gonçalves CC, Hendrix SV, McKamey S, Kohler M, Kunz G, Malenovský I, Morris BO, Novoselova M, Pinedo-Escatel JA, Rakitov RA, Rothschild MJ, Sanborn AF, Takiya DM, Wallace MS, Zahniser JN (2022) [onward] *Inflatopina* Lu, Dietrich & Qin, 2017. World Auchenorrhyncha Database. TaxonPages. https://hoppers.speciesfile.org

Dworakowska I (1993) Remarks on *Alebra* Fieb. and Eastern Hemisphere Alebrini (Auchenorrhyncha: Cicadellidae: Typhlocybinae). Entomotaxonomia 15(2): 91–121.

Xu Y, Lu SH, Wang YR, Dietrich CH, Qin DZ (2017) Two new leafhopper genera of the *Alebroides* genus group (Hemiptera: Cicadellidae: Typhlocybinae) from China, with a key to genera of the group. Entomological Science 20(1): 327–337. https://doi.org/10.1111/ens.12260

Xu Y, Lu SH, Dietrich CH, Qin DZ (2019) Three new species of *Inflatopina* Lu, Dietrich et Qin (Hemiptera: Cicadellidae: Empoascini), with a revised key to species and a proposed nomen novum for a junior homonym. Annales Zoologici, Warszawa 69(4): 687–696. https://doi.org/10.3161/00034541anz2019.69.4.004

Xu Y, Dietrich CH, Zhang YL, Dmitriev DA, Zhang L, Wang YM, Lu SH, Qin DZ (2021) Phylogeny of the tribe Empoascini (Hemiptera: Cicadellidae: Typhlocybinae) based on morphological characteristics, with reclassification of the *Empoasca* generic group. Systematic Entomology 46: 266–286. https://doi.org/10.1111/syen.12461

Zhang YL (1990) A taxonomic study of Chinese Cicadellidae (Homoptera). Tianze Eldonejo, Yangling, Shaanxi, 218 pp.